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An Interesting Coal-Stripping Operation in Western Kentucky

Description of the Mine of D. B. Gore Company, Inc., at Diamond, Kentucky — Method of Handling Overburden Containing a Seam of Limestone Rock

THE comparatively recent development of strip mining in the coal fields of West Kentucky has been accompanied by the installation of many large shovels and tipples.

A very interesting operation may be seen at the mine of D. B. Gore Company, Inc., at Diamond, Webster County, Kentucky. Diamond is near Providence, Kentucky, and is located on the Illinois Central Railroad. Rail connection with the Louisville & Nashville could be provided but at present all shipments are being made over this road.

The property is located in a rolling country with low hills intersected at intervals by valleys. The coal, which is the No. 11 seam, occurs at a level above the bottom of the valleys, so that the deposit has an irregular outline, radiating from a central point somewhat like the fingers of a hand. About 300 acres are under lease. In developing this property it was planned to locate the tipple near a central point, and work each finger of the deposit by beginning at the outcrop and stripping toward the center until the overburden became too deep for open pit work. By this means the haul from shovel to tipple has been kept as short as possible.

The No. 11 seam averages about 5 feet in thickness. Immediately above the coal is a layer of limestone between 5 feet and 6 feet in thickness. The balance of the overburden is a heavy clay, which runs from 10 to 25 feet above the limestone. Traces of the No. 12 seam may be seen in the overburden about 20 feet above the No. 11.

Erection of the stripping shovel and construction of the tipple was commenced in January, 1922. The first coal was loaded for shipment in June, 1922. The shovel equipment consisted of a Bucyrus 225-B with an 80-foot boom and a 7-yard dipper for stripping and a Bucyrus 35-B, a 1½-yard shovel on caterpillars, for coal loading. A Bucyrus 80-B, equipped with a 41-foot 6-inch boom and a 2½-yard dipper, has recently been added to assist in handling the overburden.

As soon as the 225-B was erected it was put to work throwing up an impounding dam across the mouth of a small hollow. By this means a storage lake of about 10 acres was formed, from which the water supply for all the shovels is taken, being forced through pipe line to tank by means of piston pumps electrically operated. In moving over to the outcrop the big shovel was used to grade for the tipple loading tracks, easily providing space for several tracks. In order to reach the coal it was necessary to move the 225-B up 300 feet of 18% grade. Eight rail clamps were

View showing drilling operations and followed by Bucyrus 35-B which is being used for loading. The gentleman in the white shirt is none other than Mr. D. B. Gore, himself.

used while on this grade and no difficulty was experienced.

Arrangement of Tipple

The tipple is located a short distance from the outcrop with provision for ample tail track. The coal is dumped from side dump cars into a bin having a capacity of 125 tons. An eccentric feeder supplies a steel conveyor, which elevates the coal past the picking tables to the screens. At present only two sizes of coal are made in addition to run of mine. These sizes are 6-inch and over and 6-inch under. Only two loading tracks are in use at present, but arrangements are provided for four tracks. Five men are used on the picking tables to remove the parting which is loaded by the 35-B. A 25 h. p. motor is used to operate the tipple. In this connection it might be stated that electric power is used in driving all small units.

The loading tracks are laid on a 2% grade so as to give a gravity feed. The empty cars are controlled by a winch above the tipple, which is furnished with a brake. This brake is operated by means of ropes by a man in the tipple who can spot the car being loaded.

Transportation

Coal is hauled from the loading shovel to the tipple by means of a 36-inch gauge railway laid with 56-pound steel. Three dinkeys are used, two weighing 18 tons and one 21 tons. 5-yard Kopple cars which have been increased to 6 yards capacity by the addition of side-boards are used. These are operated in trains of 7 cars each. Special effort is made to maintain that portion of the track which is permanent in the best possible condition. The maximum haul at present is about 1½ miles. A shed and sand-house are provided for the dinkeys.

Method of Operation

Due to the heavy ledge of limestone which is just over the coal, considerable difficulty was experienced in drilling and shooting this ledge, so as to permit easy handling by the stripping shovel. In order to overcome this difficulty the 225-B has been placed on top of the limestone and is used to handle only the clay overburden and occasional loose boulders. As soon as the rock is uncovered it is drilled with air-operated Jackhamers, the holes being spaced with 5-foot centers both ways. The holes are drilled within a few inches of the coal and shot with 40% dynamite. The blasted rock is thrown over by an 80-B Bucyrus shovel equipped with a 41-foot 6-inch boom and 2½-yard dipper. This machine is of the full swing type and is mounted on equalized all-steel caterpillars and is the largest shovel of

Upper Left — Tipple showing machine shop in background.

Lower Left — The trestle, showing the cars on way to tipple.

Upper Right — Another view of the tipple showing side dump cars dumping into a 125-foot bin, steel conveyor to elevate coal, the screens, also car being loaded on second track.

The Bucyrus 35-B Loading Coal Into 5-yard Koppel Cars

The Bucyrus 80-B on top of the coal. This shovel is being used to handle the blasted rock over the coal seam.

The Bucyrus 225-B which is being used to strip the overburden which lies over the limestone stratum. The material consists for the most part of clay with occasional heavy boulders.

Drilling rock ahead of the Bucyrus 80-B. The rock is covered with an overburden of clay. As soon as it is uncovered, it is drilled with Jackhamers, and blasted with 40% Dynamite.

Views of the Coal-Stripping and Loading Operations, D. B. Gore Company, Inc., Diamond, Kentucky

Eastman, Gardiner & Company of Laurel, Mississippi, are extending their logging road into their pine timber holdings in Southern Mississippi. The views above show a 20-B Bucyrus excavating for a 12-foot roadbed.

this type so mounted. A 35-B Bucyrus coal loader equipped with 30-foot boom and 1¾-yard coal dipper digs the coal after it has been broken by light shots.

Shop

A well-furnished shop for repair work is part of the equipment. The drill press, emery wheel and other machines are electrically driven. In one corner of the shop is mounted a Worthington compound feather-valve compressor. This machine is driven by a 100 h. p. motor and is capable of supplying 300 cubic feet of free air per minute, which is piped into the pit, and is sufficient to operate six Jackhamer drills. These drills are used on the rock and coal.

Electric current is carried to the pit by a transmission line at 2200 volts. A transformer at this point steps the voltage down to 220 where it is used with the electric welder or for operating the drainage pump.

The welder is of the General Electric arc type and is mounted on a car frame so that it can be easily moved out to the shovel or used in the shop as needed. An orxacetyline outfit is also used for cutting rivets and general repair work. Compressed air is also supplied at the shovel for driving rivets.

A very useful machine is the 4-inch centrifugal mine pump, which is also mounted on 36-inch gauge trucks. This pump is also electrically driven and can be quickly moved and put in operation where needed.

The Bucyrus 225-B shovel is operated for two ten-hour shifts and the Bucyrus 80-B and coal loader for one shift.

Approximately 15,000 tons of coal are shipped per month at present. The Bucyrus 225-B has averaged about 80,000 yards per month when handling both the limestone and clay. Under the new scheme of having a separate shovel for the rock, which can be recovered and properly shot, it is hoped to exceed this output considerably.

This operation is under the supervision of Mr. W. L. Robertson, General Superintendent, who is ably assisted by Mr. G. C. George, Superintendent and Mr. E. P. Gore is in charge of the office.

V. Erickson is operating the Bucyrus 225-B on the day shift with Jud. Collier as his cranesman; O. P. Brooks and S. Ratliff are on the opposite shift. Harry Nunez is at the levers of the Bucyrus 80-B and L. B. George on the Bucyrus 35-B.

Building a Logging Road in Mississippi with a Revolving Shovel

Eastman, Gardiner & Company of Laurel, Mississippi, Are Building 15 Miles of Logging Road into Their Timber by Means of a ¾-yard Caterpillar Mounted Shovel and Are Doing This at 50% of the Cost of Hand and Team Methods

EASTMAN, GARDINER & COMPANY of Laurel, Mississippi, one of the largest logging companies in Mississippi, are at the present time engaged in extending their logging road into their 700,000,000 feet of pine timber holdings in Southern Mississippi.

This company at present operates 70 miles of standard gauge line from their mill at Laurel, a town of 15,000 population in Jones County, into their timber in Smith and Simpson Counties.

The 20-B Bucyrus and Its Crew — J. H. Williams, the Operator, Also Acts as Foreman

Working Through a Clearing Over Marshy Ground

The work under way at the present time started on July 1, 1923, and contemplates the building of 15 miles of line in the vicinity of Cohay, Simpson County, a distance of about 35 miles northwest of Laurel. This road is through thickly wooded, rolling country.

In order to handle this work more cheaply and expeditiously than was formerly done by hand and team methods, this company purchased a 20-B Bucyrus steam shovel mounted on caterpillars equipped with a ¾-yard dipper.

The 20-B Bucyrus working through thickly wooded country. The cuts ran up to 12 feet. Material was overcast. This work was done at 50% of hand and team cost.

The roadbed under construction is 12 feet in width, and for the most part is through heavily timbered and rolling country. The cutting has run from one foot to 12 feet, the heavier cuts averaging 12 feet in depth.

Because of the hillside work which is prevalent, the material is overcast and on side-hill work is used for building fills.

Stumps are dug out and cast aside by the shovel without the assistance of explosives. The material is good digging and no powder is used.

The shovel has been working an average of six hours per day, and has been handling approximately 300 cubic yards in that period. Lost time averages about 33% which is largely due to marshy ground and miscellaneous short delays. Whatever trouble has been encountered because of the soft character of the ground in places has been overcome by putting poles under the caterpillars.

Although the shovel is equipped with a standard coal-burning boiler, pine wood is being used. The fuel cost is $3.00 per day.

The cost of operation, including labor, fuel and maintenance, has come to about 15 cents per cubic yard or 50% of the cost of doing the work by hand and team methods, according to the statement of Mr. Charles Green, Vice-President and General Manager, to whom we are indebted for the above information.

Water is hauled to the machine from nearby streams in a tank mounted on a wagon.

The Superintendent in charge of the work is J. R. Carr, J. H. Williams operates the shovel and at the same time acts as foreman.

The Steam Shovel

Down in a pit by the long blue road
That comes from the canyons of steel
Browses the monster of grit and rock,
Wolfing his endless meal.

Grating his jaws on the living earth
With a thousand hisses and groans,
Wallowing low in the drab, dark muck,
Gorging the dirt and stones.

Up pours the steam of his burning breath
In geysers and billows white,
Down drops his head in the darkling depths,
Then up to the blazing light.

Weaving and twisting, the ponderous thing
Gouges the square pit out,
Down in the crater with creak and yell,
Up with the blast of a shout.

Endless and endless — a tireless brute —
The sun comes out of the East,
And wafts the last faint flame of him
Over the plodding beast.

Not since the dawn of the world began
Have the gods seen such as he —
Deliberate as a glacier moves,
As ceaseless as the sea.

Samuel M. Sargent, Jr.

The Detroit Sewage Program—I

Vast Amount of Excavating Equipment, Concrete Mixers, Collapsible Forms, Etc., Being Used.

NOTE: — *This is the first of a series of three articles that will appear in The Excavating Engineer concerning Detroit's Sewage Program. The story of this work should prove to be of interest to our readers for two reasons: first, because it is the largest sewer in the world; secondly, because the work is done almost entirely by dragline excavators.*

TWENTY years ago Detroit, as a leading city of the United States, was practically unknown. Detroit's growth in the past few years has been amazing. Today, that city with Hamtramck Districk and Highland Park has a population of 1,088,943, the fourth city of the United States.

It has 3,000 manufacturing establishments employing 310,000 persons with an annual output valued at $1,450,000,000. The automobile indus-

Concreting — Showing Blaw-Knox Collapsible Forms and Lakewood Mixer with Spouting Tower

try alone employs 140,000 workers with a yearly output of 1,110,000 cars.

In fact, that city's growth has been so astounding in the last few years, that it has not had time to make proper disposal of its storm waters, and to this end the city of Detroit is spending the enormous sum of $35,000,000.

It is with Detroit's sewage improvement that this article is concerned. Detroit's sewer program may be roughly divided into four general divisions: (1) The Conner's Creek System, (2) The Bedford Avenue System, (3) The Ashland Avenue System, (4) The Long Road System.

Conner's Creek Sewer — Section 1

The first of these systems and perhaps the one that has occupied the greatest amount of attention up to this time is the Conner's Creek Sewer, about seven miles long, for which 18,250 feet of three and two-barrel sewer in Sections 1 and 2 is now being handled by the T. A. Gillespie Company of Detroit and New York at a price of $2,190,850 and $1,246,028 respectively.

The entire Conner's Creek System extends in Seven Mile Road from Livernois easterly to Conner's Creek, thence in Conner's Creek and Conner's Avenue southerly to Jefferson Avenue.

Approximately 14 miles of large tributary public sewers and a great mileage of lateral sewers complete the Conner's Creek System.

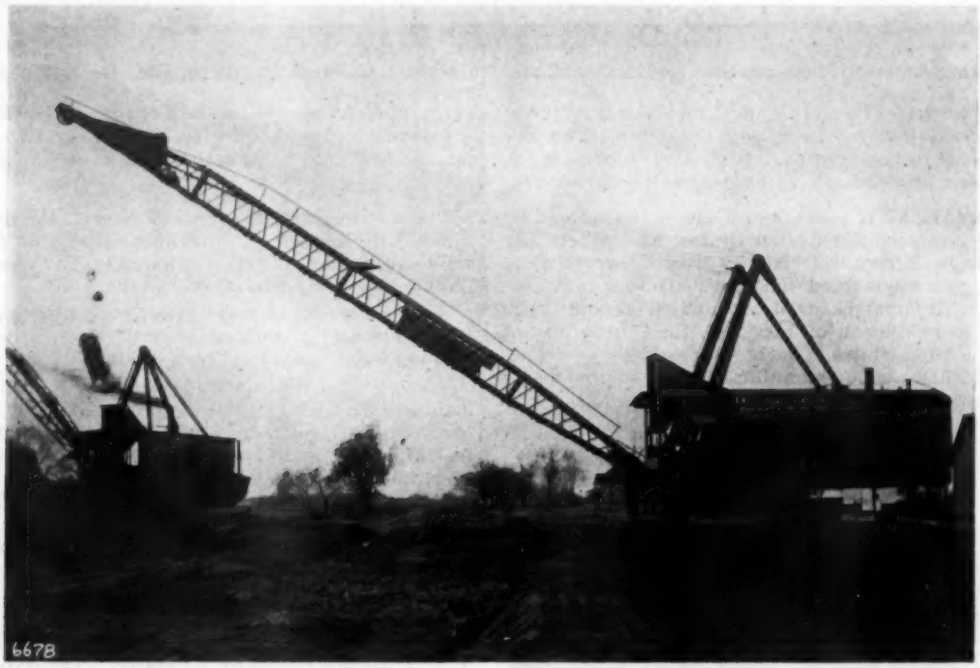
The outlet of Section 1 of this sewer consists of a three-barrel rectangular concrete box 7,700 feet long, each barrel being 15¾ feet wide by 17½ feet high, inside measurements. This is equal to a channel 46¼ feet wide and 17½ feet deep, and each barrel is large enough to accommodate a single-track street railway. It is said to be the largest in the world. Section 1 of this mammoth sewer has been completed and the second section has almost reached the stage of completion.

The contract for the construction of Section 1 of this system was awarded on April 5, 1921, to T. A. Gillespie Company, as stated. The date set for the completion was June 1, 1923, but the

Keeping Ahead of the Concreting — The Dragline is Digging Ahead of the Concreting which is Being Done by a Lakewood Mixer and Blaw-Knox Collapsible Forms.

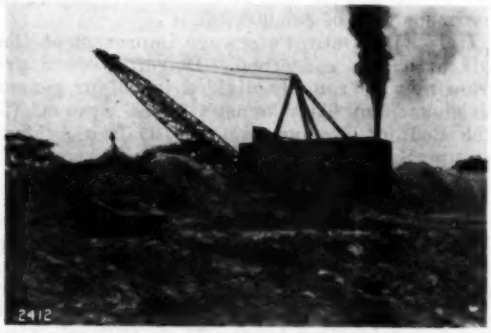
entire sewer was finished November 15, 1922, and with the exception of joining a short section under the tracks of the Detroit Terminal Railroad, all concreting was completed in September, 1922. The entire length of Section 1 is 7,700 feet.

The drainage area of the entire Conner's Creek System is 41 square miles and is designed to take care of a discharge of 5,000 cubic feet per second. It is said that the sewer will always be about 75% full in Section 1, owing to the invert being about thirteen feet below the level of the Detroit River.



The Upper View Shows Bucyrus Class-24 Dragline on Section 1 Digging a 50-foot Trench 45 Feet wide.

The Two Smaller Views Shown Here Are Views of the Bucyrus Class-20 Dragline, Backfilling.



Views of T. A. Gillespie's Bucyrus Class-20 and Class-24 Draglines Which Were Used on Conner's Creek System

Section 1 starts in the bed of Conner's Creek, 600 feet south of Kercheval Avenue, follows the creek bed for 400 feet, passes under the tracks of the Detroit Terminal Railroad, turns a right angle into Kercheval Avenue, which it follows for a short distance, and then turns another right angle north into Conner's Avenue, a distance of about 6,750 feet.

The Excavation

The excavation in connection with Section 1 was somewhat difficult, as is often the case in sewer construction. The sewer structure at the bottom of the cut averages 54 feet, with an average depth of 28 feet and with a width at the top of 82 feet. As the city allowed only the street as the right-of-way it was necessary for the contractor to rent lands on either side for dump tracks and concrete mixing plants.

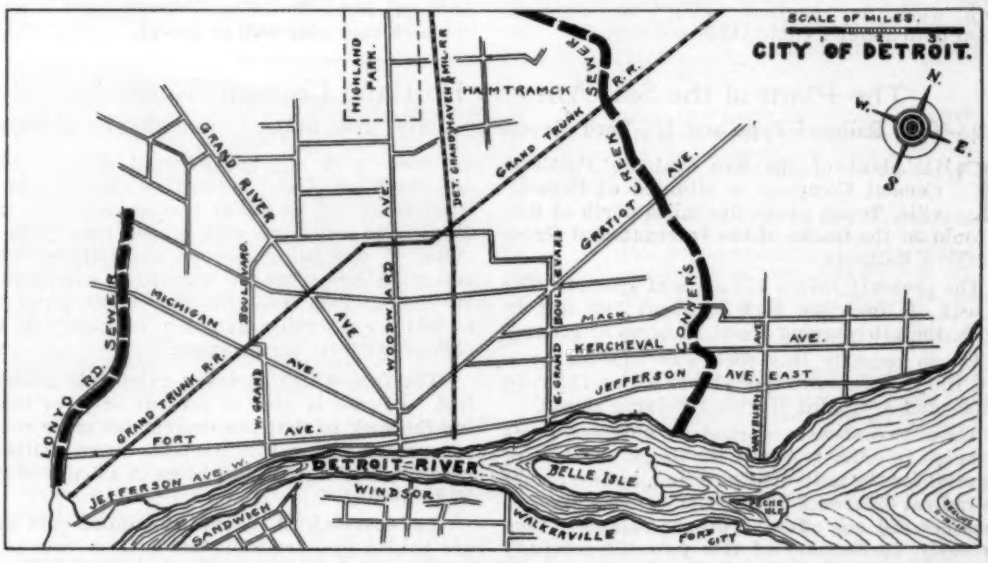
The excavation of this section was almost entirely handled by two Bucyrus Class-20 draglines, equipped with a 2½-yard Page bucket and operated on two ten-hour shifts. The material was used for backfill or wasted on a dump pile. After the excavation was well under way in Kercheval Avenue, it was necessary to use steel piling supported by 18-inch I-beam walers, with 54-foot lattice steel struts across the cut. In the Conner's Avenue part of the excavation, a Bucyrus 70-C shovel equipped with a 2-yard dipper was used, to excavate the top 12 to 18 feet of the cut. This shovel was followed by the Bucyrus Class-20 dragline which finished the excavation to grade. The banks had a 2 to 1 slope and the material consisted for the most part of heavy yellow clay on top, and in the lower portion of blue clay, both of which were very difficult to handle, the excavated material being hauled in 4-yard cars to dumps or to backfill over finished work.

The total excavation for Section 1 was 551,000 cubic yards, 90,000 yards of 1:2:4 concrete were required, and a total of 4,900 tons of reinforcing steel was placed. Collapsible telescopic steel forms from the Blaw-Knox Company were employed on the straight portion of the sewer in Conner's Avenue. Four sets of forms were used in each barrel.

Conner's Creek Sewer — Section 2

Bids were received on August 25, 1922, for Section 2, Conner's Creek Sewer, and the entire contract was awarded to T. A. Gillespie Company, the successful bidder on Section 1. The contract called for 10,550 feet of two-barrel sewer, each barrel 12 feet wide by 17 feet 6 inches high. The above-mentioned company was awarded the contract at $113.30 per foot for the two-barrel type by the city on September 19, 1922. The total excavation for this section will be about 800,000 cubic yards.

The T. A. Gillespie Company have three machines in operation on this contract. A Bucyrus Class-20 dragline equipped with a 2½-cubic-yard Page bucket is used to clear the way for a second dragline, a Bucyrus Class-24 which is a larger machine, carrying a 3½-cubic-yard bucket. This machine is operating on two 11-hour shifts and is excavating about 50 feet a day with an average daily output of 3,750 cubic yards. The



Map of Detroit Showing Lonyo Road Sewer on the East and Conner's Creek Sewer on the West Side of the City.

average depth of the cut is about 36 feet with a maximum depth of 40 feet. The average width at the bottom of the cut is 28 feet, the slopes being about 1½ to 1, thus making the width at the top about 76 feet.

Like Section 1, the material consists of a heavy yellow clay for the first 10 to 12 feet and at a depth beyond this, the well-known "Detroit blue clay" is encountered, which is very difficult to handle, two shakes of the bucket being necessary at almost every cycle.

The excavated material at the time of writing, is being dumped to the west side of the cut, the east side being used for mixing plants and material tracks.

The excavation progresses just a day or so ahead of the concreting, which does not give the sides of the cut time enough to dry sufficiently to cause slides. Up to the time of writing, no trouble on this section had been encountered.

The Concreting

The invert, or floor of the sewer is first poured, after which the Blaw-Knox collapsible forms, which are 25-foot sections and operated on 60-pound rails, are drawn forward into position by means of winches and block and tackle. When the position desired is reached, turnbuckles expand the forms to their proper position and plank bracing for the exterior support is placed.

The concrete walls are 16 inches thick and the two barrels, which, as heretofore mentioned, are 12 feet wide and 17 feet 6 inches deep, are separated by a wall 16 inches in thickness. A total of 23 tons of steel for every 50-foot section, a single day's work, is required, while the concrete amounts to about 7 cubic yards per foot.

The mixing plant consists of a Lakewood 1-yard mixer, a 30-foot spouting tower, a boiler and a hoisting engine, the complete machine being mounted on a portable platform. From the hoisting tower hopper, the concrete passes through a swinging chute whereby the concrete may be directed to any part of the section.

The central proportioning plant is located near the center of the contract so that the average haul will be as short as possible.

In addition to this main sewer, there will be a 6-foot branch sewer entering at Shoemaher Avenue, about 300 feet of which is also to be built by the T. A. Gillespie Company.

Another tributary will enter the main sewer at Gratiot Avenue. This branch, all of which is to be built by the above-mentioned company, is an 11-foot sewer and about 1100 feet long.

An interesting point concerning the excavation is that a new Bucyrus Class-24 is being used for excavating the second section, while the Bucyrus Class-20, which was used for this type of work on the first section, is now backfilling.

Another Bucyrus Class-20 is being used to clear the way for the Class-24 through an old garbage dump pile, which proved to be poor support for this heavy machine.

Section 1, as mentioned before, was completed in schedule time and it is expected that Section 2 will also be finished on contract time. John J. Dillon is general superintendent, with L. J. Salmon assisting, Major Carl Ashley, Engineer, and P. J. Coffey as foreman on the job. The T. A. Gillespie Company, whose address is 1612 First National Bank Building, Detroit, have a record of which they may well be proud.

The Plant of the San Antonio Portland Cement Company

A 2½-Yard Railroad-Type and 1¾-Yard Revolving Shovel Used to Get Proper Mixture of Material

THE plant of the San Antonio Portland Cement Company is situated at Cementville, Texas, about five miles north of San Antonio on the tracks of the International Great Northern Railroad.

The property covers 475 acres of ground. The deposit of limestone rock is about 100 feet in depth, the pit covering about 10 acres of ground.

Up to recently this rock was handled by a 70-C Bucyrus railroad-type shovel with a 2½-yard dipper and a ¾-yard Marion revolving shovel.

These two shovels worked in different parts of the pit in order to secure the proper mixture of material for the mill. It was found, however, that the radical difference in capacity between the two machines did not afford a proper balance. Consequently, in January of this year the company installed a new Bucyrus 50-B revolving shovel, equipped with a 1¾-cubic-yard dipper, which machine has replaced the smaller shovel in the pit. Because of the fact that this shovel must move frequently from one part of the quarry to the other, it was purchased on caterpillars, which mounting simplifies the operations considerably. We are advised that this shovel has given very satisfactory service and the company is well pleased with its performance.

The face which is being carried is about 25 feet. Powder is used at present only for loosening the rock so that the shovels can more readily excavate it. For this purpose churn drills are used for drilling 2¼-inch holes to a depth of from 15 to 20 feet.

The shovels load six-yard side dump cars which are hauled in a train of two or three cars to the mill by a Davenport locomotive, the distance

The 50-B Bucyrus in Operation, Loading 6-yard Cars

varying from 700 to 800 feet. At present 100 to 110 cars are being loaded per day with somewhat over six tons to the car. The plant has a normal capacity of 1500 barrels of cement per day.

This cement is marketed by the Standard Portland Cement Company of San Antonio,

This 50-B Bucyrus with a 1¼-yard Dipper Replaced a ¾-yard Shovel

Texas, under the name of the "Alamo" brand which is favorably known to contractors throughout the Southeastern States.

The plant was built in 1910 and is of the usual dry process type, using one No. 8 Williams Jumbo crusher.

This company enjoys the reputation of having one of the best run and most modern plants in this section of the country.

The officials of the company are as follows: C. Baumberger, President; F. W. Cook, Vice-President; Albert Kroukosky, Secretary; C. Baumberger, Jr., Assistant Secretary, Chas. Baldus, Treasurer.

A well-known steam shovel manufacturer has been advertising their product through the use of poetry. For instance, someone bursts into song about its ability to move mountains. After all, it is a matter of faith with all of us.

A steam shovel cooed to a battleship truck
"I will make your gait snappy today,
The skipper aboard me is down on his luck,
And your boss won't have much to say."

The battleship purred, "How come, sweet thing,
'Haint' you done enough with your low short swing
By bumping me, scraping me, sidesweeping and breaking me,
Dropping large boulders and everything?"

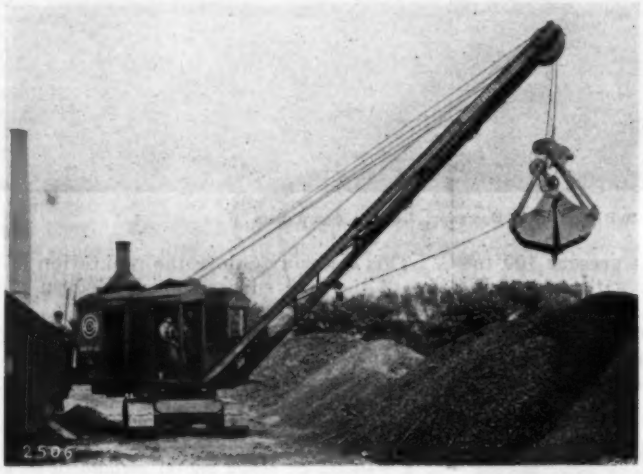
The shovel just grunted, and swung to the face,
The handles dropped down, set the dipper in place,
The crowd went to work, the hoist did its share,
And presently urged a huge load in the air.

The architect, owner, contractor, and boss,
Perched on the bank— *!;?(x.)?**.

Editor's Note—I wish to hear from shovel runners as to what these last-mentioned gentlemen may have done to help out, i. e., what do they usually do besides lending moral support, etc.

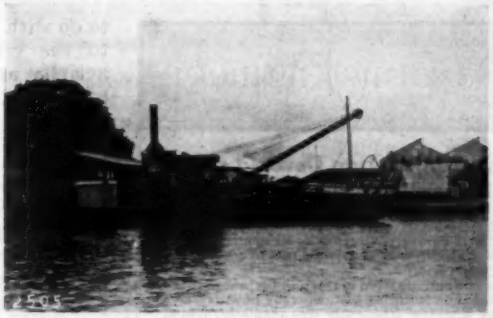
This shows a Bucyrus 14-B shovel owned by J. J. McCaughey, Chicago, dumping into 40-yard Standard Goodwin Cars on a section of third track work for the Chicago & North-Western Railroad near Wheaton, Illinois. The work will involve about 60,000 cubic yards, and is under the supervision of B. M. Lockard, Assistant Engineer.

Making the dirt fly on Ha[illegible] S[illegible] for the construction of a br[illegible] on from El Secundo to Wilmi[illegible] Calif[illegible] is a Bucyrus 70-C operated [illegible]rge shows a Bucyrus 50-B oper[illegible]C. also another shovel on thi[illegible] a being run by W. Moore.



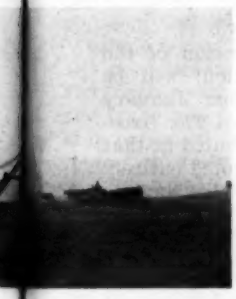
Bucyrus 20-B clamshell owned by the University of Wisconsin, at Madison, Wisconsin. At present they are using the machine to unload coal cars and to handle coal around their power plant. Mr. J. J. Novotnycoe is operating engineer in charge of the machine with Mr. John Emery as his assistant. Mr. Perry Phavo is the operator, and Andrew Patton is the fireman.

The above is a panorama of the Lehigh Stone Company's Quarry at Lehigh, Illinois, near [illegible]

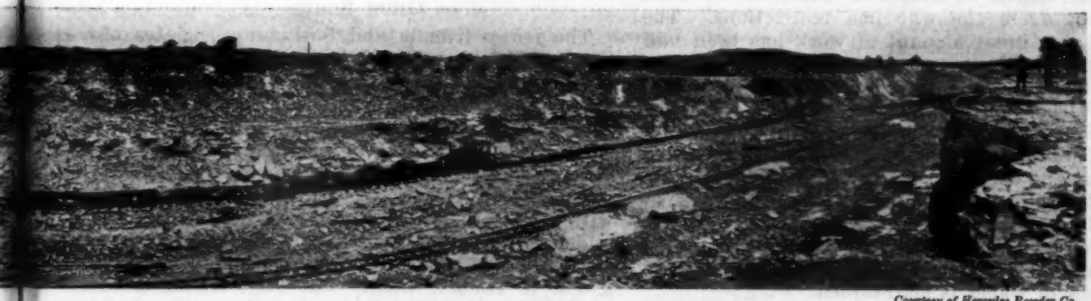


The above, a Bucyrus 30-B dragline, equipped with a special wood-burning boiler, is owned by the Public Works Department, Burmah, India. It is mounted on a steel barge and is moored in the river at Rangoon.

Sprage's section of work on the Santa Fe Railroad California. The above view Peck. The view below C. W. Lightsey. There is a Bucyrus 30-B which is



A recent photograph showing about a quarter of the famous Hull-Rust open-pit iron mine of the Oliver Iron Mining Company, on the Mesabe Range, Hibbing, Minnesota. The Hull-Rust and Mahoning Pits are as one big pit connected with a small neck to the Sellers, Burt, Day, Webb and Susquehanna, which together form a large pit. The shovel in the foreground is a Bucyrus 225-B revolving shovel loading ore.



Courtesy of Hercules Powder Co.

...see. Note the long face carried. Four Bucyrus railroad-type shovels are in use here.

The Excavating Engineer

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The Business Situation

The general business situation has not shown recently the pronounced change for the better which has been looked for in some quarters. But, on the other hand, we have not yet entered into the beginnings of the panic, which some lugubrious prophets have expected. Why is it that both pessimists and optimists have been deceived? Why is it that business is still running along on an even keel, avoiding both the Scylla of overexpansion and the Charybdis of depression?

The incipient boom of last spring caused a natural increase in prices, and this in turn destroyed the boom spirit, and brought about hand-to-mouth buying. But production, consumption and railroad traffic have continued to make new high records all summer.

All the factors influential in bringing about the recent revival in industry are still effective.

The edge may be off the demand for construction work in some places and in some lines, but it is certain that the country has not yet made good the deficit in houses or construction work resulting from the war-time restrictions. The fact that a great amount of work has been laid aside during the past season because of excessive costs is an assurance that there is much yet to be done. The building permit records of recent months show that much new work is being projected, and the reports that come from contractors and engineers commonly agree that there is a large body of work in sight. Prices of material have been declining. The indications are that there will be little or no unemployment in the building trades next year, even though the present scale of wages is maintained.

Hydro-electric development promises to be on a large scale, the high cost of coal being a stimulating factor.

Nearly all discussions of the conditions having to do with the business cycle, give first importance to the credit situation. The rising trend of activity and prices starts with an easy state of credit and culminates when the available supply is exhausted; then as prices begin to fall, the efforts of creditors to collect what is owing them, and the frantic rush of debtors to save something from their shrinking margins, drives prices still lower. We have never had, and can never have, a serious depression in this country which begins in an easy money market. That there is still a great hang-over of indebtedness from the boom period is true, but it does not make a critical situation in any general sense. There is now plenty of liquid capital to handle the business of the country. There is no current overextension of credits and no overstocking of supplies.

In fact, the very conservatism and lack of confidence, which are deplored in some quarters, are responsible for the present level trend of business.

Under the circumstances, those who expand, when there is not enough expansion by others to endanger prosperity, will be the ones to profit most from the present situation.

Our Good Roads Number

The 1924 Road Show and Convention of the American Road Builders' Association, will be held in the Coliseum, Chicago, from January 14th to 18th. The January number of *The Excavating Engineer,* which will be distributed at that time, will be a special road issue, devoted entirely to those phases of road construction that have to do with excavation.

Road and highway construction have grown to such enormous proportions within the last decade that there is a comparatively small number of those engaged in excavation work who are not interested in the problems pertaining thereto. We feel, therefore, that such a number should prove of interest to our readers, particularly at this time.

Grant Smith

The many friends and business associates of Grant Smith, founder of the well-known contracting firm of Grant Smith & Co., St. Paul, Minnesota, were grieved and shocked to hear of his recent death at his home in St. Paul.

He was 59 years old at the time of his death. He was born in Portage, Wisconsin, in 1864, and in his early twenties had formed a company with E. V. and W. E. Hauser, both of St. Paul, under the name of Grant Smith & Company.

The above company, together with Grant Smith & Co. & Locher, which was later changed to Smith, Hauser & MacIsaac, and Grant Smith & Co. & McDonnell, a Canadian branch company, were organized by Mr. Smith.

· FIELD NOTES ·

Truck Operation in Cold Weather

By P. L. Sniffin

It has often been said, and very aptly, that one single week of regular truck operation under strenuous winter conditions without proper precautions is the equivalent of a year or more of service as far as the serviceable life and repair cost of the vehicle is concerned.

Careful attention to the details given here will not only assure dependable operation of the trucks, but will do much to avoid expensive breakdowns on the road. In addition to this, it is equally true that proper care in following these suggestions will substantially prolong the serviceable life of the equipment.

Care of Radiator

The radiator is perhaps the one part that causes the most trouble. A very common mistake is that of providing a radiator cover, or throwing a blanket over the hood of the truck when it is left standing, with the belief that this will keep the cold out and retain the heat of the engine. While it is true that this does help some, it should not be depended upon to any great extent since the biggest source of cold air is from underneath the truck where protection is not available. For this reason, if the truck is to remain idle out of doors when the temperature is below freezing, and when there is no anti-freezing solution in the radiator, the engine should be started and run for a few minutes at frequent intervals.

The writer has found that results from the various prepared anti-freezing solutions that are on the market are, for the most part, unsatisfactory. While most of these will serve the purpose for which they are intended, a good many have an injurious effect upon the cooling system. A recognized authority on this subject gives the following specific recommendations:

"Denatured alcohol is the best substance to use as a non-freezing solution, as it has no destructive action whatever on either metal or rubber, makes no deposits, and never causes electrolytic action. A solution of 50 per cent water and 50 per cent alcohol will stand about 32 degrees below zero. The only disadvantage is that it evaporates more readily than water, so that when adding new solution more alcohol than water must be added in order to keep the solution of the same strength. The combination of alcohol, glycerine and water seems to give very good results. In this combination, equal parts of alcohol and glycerine are used. The alcohol has a tendency to overcome the destructive action of the glycerine on the rubber connections, and the glycerine keeps the alcohol from evaporating too rapidly. The freezing point depends on the strength of the solution. A solution of 60 per cent water and 20 per cent each of alcohol and glycerine freezes at 24 degrees below zero. The proportions must be governed by the locality in which they are used."

Care of Other Truck Parts

Certain other parts of the motor vehicle should receive special attention during winter. For the sake of brevity, these suggestions may be listed as follows:

1. Ordinarily it is necessary to change carburetor adjustment giving a slightly richer mixture for best results in cold weather. Great care should be taken to see that adjustment, when made, is correct and then left alone. It is impossible to maintain proper carburetor adjustment if the driver tinkers with it every time the engine shows the least irregularity of running.

2. Drain gasoline tank and carburetor of sediment accumulated at traps so that no water may be present in any of the connections to freeze and cut off the fuel supply. If a considerable quantity of water is present, it may crack feed pipe or connections when freezing.

3. The use of a lighter grade of motor oil is to be recommended for most vehicles, since it will flow more readily when cold. It is always wise to drain and clean the crankcase at the beginning of a winter season.

4. The steering gear housing and steering connections should be cleaned and packed with light grease, and covered on the outside with heavy grease to prevent the entrance of water while the truck is exposed to melting snow and sleet.

5. Springs should be slushed with oil so that no water can work in between the leaves to cause rust and freeze.

6. Fill all grease cups with soft grease. Heavy grease will harden and pack in cold weather and will not reach the bearing surfaces.

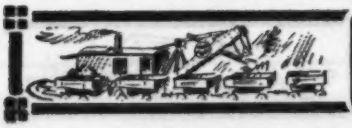
7. Cover exposed, unpainted parts with oil to prevent rust.

8. In the case of chain-driven trucks, take off driving chains, clean with kerosene, then with gasoline, dry, immerse in hot heavy lubricant and wipe off outside. This will prevent snow and water from getting in between the roller and pin.

(To be continued)

One To Go

"Are you the photographer, Meester?"
"Yes, ma'am."
"Do you take children's pictures?"
"Yes, ma'am."
"How much do you charge?"
"Three dollars a dozen."
"Well, I'll have to see you again. I've only got eleven children."



DEVICES YOU OUGHT TO KNOW ABOUT

A Gasoline Hammer Drill

A Gasoline Impact Drill of the air-hammer type is now manufactured by the Pennsylvania Gasoline Drill Company of Philadelphia, Pa.

This drilling unit is an epoch in the drilling equipments now in practical use, it being a self-contained, portable, gasoline hammer, so powerful and compact that one man operates and transports it from place to place. Like the self-contained gasoline engine, this gasoline hammer makes its own power, therefore no other power equipment has to be transported with it.

When first seen in operation, the lack of connection to other agency of power causes wonder and forcefully brings a realization of the terrific power of gasoline when applied directly to the hammer piston of this drill.

This Somervell Gasoline Hammer Drill was first developed for drilling rock, but, because of its portability and simplicity, the advantages of its application to other work was quickly recognized. This further application included cutting asphalt streets, breaking concrete, picking hard earth, ramming back-fill in trenches, removing granite blocks, removing wood blocks, drilling foundations, drilling through walls, driving tie spikes, ramming tie ballast, stripping in mines, shaft sinking, exploring, etc.

Prior to this invention, all types of power drills were limited in their application to work by the length of an air hose or by electric wires. Power for either of these methods must be supplied to them by an auxiliary power equipment, which on account of the size and weight cannot be cheaply transported, nor can it be located near enough to do probably more than 60% of the work to which a power drill could profitably be applied.

The following is comparative data of the weight, purchase price and practical operating costs of the gasoline drill and mounted air-drilling equipment, an equal amount of work being assumed.

	Portable Air Drills	Somervell Gas Drills	Saving
Average weight.....	3000 lbs.	70 lbs.	2930 lbs.
Average selling price..	$1800	$600	$1200
Daily gasoline consumption at 27c per gal...	16	1½	$3.91 a day
Labor at $4.50 a day..	2 men	1 man	$4.50 a day

Transportation and upkeep costs not estimated.

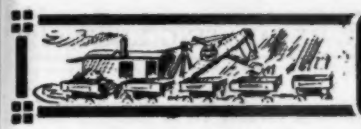
The mechanical principle of this Gasoline Hammer Drill combines the action of an air hammer and a gasoline engine in such a manner that the drilling unit has but two moving parts, the hammer piston and the flywheel assembly. No crank shaft or connecting rod is employed and there is no spring or other yielding member used in the internal construction. No inlet or exhaust valves or cam shafts are used, as the air and gas passages are fixed ports, cut through the solid steel of the cylinder.

The down or power strokes of the hammer piston are made with approximately 900 pounds of gasoline explosive force thrusting it forward to hit the drill bit with terrific force. The flywheel is employed only to return the hammer piston on the upward or compression strokes. Approximately 1800 impacts are struck each minute. For carburetion, a gasoline mixing valve is used which permits the drill to be worked at any angle. While the drill continues to run at full speed, the operator shifts it from one position to another and to any desired angle without affecting its operation. To start the drill, the operator has but to give the rim of the flywheel a pull by hand and even in the coldest weather it starts "with consistent regularity" as was remarked by Mr. W. K. Woolam, President of the Commercial Exchange of Philadelphia.

Somervell Gasoline Drill

Three years of uninterrupted application to the development have been spent in bringing this gasoline hammer drill to this stage of perfection, and it has been refined to such an extent that a monkey wrench and a screw driver only are needed to take the whole drill apart and to put it together again, no mechanical skill of any degree being necessary.

Further information may be obtained by writing The Pennsylvania Gasoline Drill Company, Land Title Building, Philadelphia. For convenience the postal enclosed in this magazine may be used.



SHOTS FROM THE · FIRING LINE ·

Eastern States Notes

BY E. G. LEWIS, E. B. WILLIAMS, THOS. A. BURNS AND H. E. HEIDRICH

Maine

The City of Portland Water Commission will let contracts in the spring for a main water conduit to cost approximately $300,000.

A. R. Kingsley of Portland was recently awarded contract for grading the "Eastern Promenade" — a part of the new Portland public park system.

T. Stuart & Sons of Newton, Massachusetts, are making rapid progress with the construction of the new Maine Central Railroad yard at Rigby, Maine. Jack Mayer is operating a 20-B Bucyrus for Stuart's on this work.

New Hampshire

The New Hampshire State Highway Commission recently awarded the following contracts: In Newbury County to Arborio Construction Company of Hartford, Connecticut; in Jaffrey County to Amos D. Bridges & Sons of Hazardville, Connecticut; in Wakefield County to Colburn Construction Company of Concord, New Hampshire; in Exeter County to Amos D. Bridges & Sons of Hazardville, Connecticut.

Sanders Engineering Company of Portland, Maine, are rapidly completing the construction of a new power house and tail race at Gorham, New Hampshire, for the Twin Cities Gas and Electric Company. This work called for many interesting engineering feats which will be described in a later issue. Den. Keeke is operating a 20-B Bucyrus excavating the tail race on this project.

Vermont

The Department of Highways, Montpelier, Vermont, recently awarded the following contracts for state road work: Clarendon County to Louis Longhi & Bros. of Torrington, Connecticut; Chester County to George H. Stebbins of North Adams, Massachusetts; Woodford County to M. J. Burrington of Woodford, Vermont. The bids received for Bloomfield, Ferdinand, and Colchester Counties were rejected and will be readvertised at a later date.

The Department of Highways, Montpelier, awarded contract for paving 1.85 miles Federal Aid Project No. 35, in Ferrisburg County to P. C. Ricci of Rutland, Vermont, at $74,246.

Massachusetts

The Commonwealth of Massachusetts State Highway Department, Boston, has awarded the following contracts during the past month for state road work: Highway at Stockbridge, Massachusetts, to S. W. Menaquale of Stockbridge; highway at Randolph, Massachusetts, to Powers Bros. of Brockton, Massachusetts; concrete highway at Truro and Wellfleet, Massachusetts, to Lane Construction Corporation of Meriden, Connecticut; reconstruct highway at Scituate, Massachusetts, to Reynolds Bros. of Canton, Massachusetts; highway at Sheffield, Massachusetts, to Perini & Sons of Ashland, Massachusetts; highway at Milford, Massachusetts, to Milford Construction Company; highway at North Attleboro, Massachusetts, to T. J. Quinn & Sons of Ashton, Rhode Island; bitulithic macadam highway at Northboro, Massachusetts, to C. E. Horne of Milbury, Massachusetts. Bids will be received in the near future by the Commonwealth for highways at Revere and Templeton.

Commonwealth of Massachusetts Metropolitan District Commission awarded contract for grading and surfacing Old Colony Parkway, including 12,000 yards earth grading, 32,000 yards earth fill, 15,000 tons crushed stone, 80,000 gallons asphalt, to James H. Fannon of Somerville, Massachusetts, at $171,150.

The City of Boston Park Commission awarded contract on November 9th for filling and grading Orient Heights Playground to J. C. Coleman & Sons of Boston at $17,379.

The New England Construction Company of Springfield are widening two rock cuts on the Boston & Albany Railroad for the construction of new bridges near Westfield, Massachusetts.

The Lane Construction Corporation have just about completed a new road at West Rutland, Massachusetts, in record time. L. J. Purrington operated a 20-B Bucyrus for the Lane Company on this work.

Ira Earles is operating a 20-B for J. C. Coleman & Sons grading the Eagle Hill Playground in East Boston. Ed. Butterfield is operating another 20-B for J. C. Coleman & Sons on this same project and between them they make the dirt fly.

Rhode Island

The City of Cranston, Rhode Island, is having surveys made for a proposed sewerage system to cost approximately $2,600,000. Fay, Spofford & Thorndike of Boston, Massachusetts, are the engineers.

The United States Engineering Department of Providence awarded contract for dredging 52,000 cubic yards soft material and 125 cubic yards boulders in Pawcatuck River to Bay State Dredging & Contracting Company of Boston, Massachusetts.

The State Board of Public Works, Providence, awarded contract for paving Pontiac Road in Cranston and Warwick Counties to the Lane Construction Corporation of Meriden, Connecticut, at $89,024. Contract for paving Cumberland-Wrentham Road in Woonsocket County was awarded to Perini & Sons of Ashland, Massachusetts, at $102,053.

The City of Providence awarded contract for grading and improving Laurel Hill Avenue to Joseph Pizzi of Providence.

The City of Providence received bids on November 26th for various trunk line sewers.

New York

The seasonal rush is now well under way in the five Boroughs, and in Brooklyn, particularly, there are upward of thirty excavating contractors working every hour of daylight trying to meet the demand.

The Build-More Corporation is one of the many with several Months' work ahead. This company is now operating in the neighborhood of 9th Avenue, and Mr. James A. Bua, President, is very optimistic for the future, and is planning for a continuation of the building activity in that section of the city covering the next two years. Tom Sley and Tom Reilly, engineer and fireman respectively, are operating one of this Company's shovels in this neighborhood.

Around the corner on similar work is Frank Johnson and Louie Valentino, engineer and fireman respectively, on a shovel by M. Moscarelli.

In Manhattan, the usual amount of building development takes care of about fifty steam shovels of various sizes, and no letup is looked for, for a year at least with the optimistic planning well in advance of that period.

In Queens, such firms as the Berja Company, Inc., of Jamaica, who have had five or more shovels continuously operating at Forrest Hills all summer, are continuing with this work and are said to be planning on considerable more excavation for 1924. Our friends, Tom McVeigh, Jim O'Donnell, and the Condon Company with their numerous shovels, are most interested in that locality.

In the Bronx section school building seems to predominate, with the larger and higher-priced apartment houses running a close second, with no prospective letup with either. Contractors in that vicinity are continuing to purchase equipment and are also planning for the next two years.

Fred LaMura, Handy Brothers, and others of similar importance, find it necessary to add to their equipment regularly.

Even in Richmond, i. e., Staten Island, things continue to boom. The proposed subway extension underneath the Narrows reflects a continuation of the building in that vicinity. There appears to be prospects for several new contracting concerns in Richmond Borough, as we are told that the local contractors are entirely unable to meet the demand for excavating equipment.

However, in the "Provinces" things are "not so good." We learn that across the river in Jersey, in Bayonne and Newark particularly, many shovels are tied up, but have the impression that this is due to the old-time idea of spending the summer's earnings during the fall and winter season, which is bound to result in a longing for the first signs of spring, a little later this year and in January.

Street construction and repairs throughout Queens Borough of New York, the Bronx, and Richmond, seems to have increased rather than diminished, and previously unheard of contracts are being awarded regularly.

Some of the more active and successful concerns being James E. Gaffney, Charles D. Beckwith, Fitzgerald, and in Brooklyn, the Borough Asphalt Company, where our friend, W. M. McCoy, an authority on street grading and paving, is finding it difficult to find time to eat, as we have looked for him at our favorite restaurant regularly for the last two weeks without seeing him, and the head waiter is not satisfied yet with our identity and refuses to take a chance.

We note in a recent publication that the Cranford Company of Brooklyn have submitted an estimate for the paving of Sheepshead Bay. In fact we believe that the item referred to repaving part of the Bay.

Out on Long Island the Sicilian Asphalt Paving Company of 41 Park Row, New York, are said to have been pulling down considerable contracts.

Spedero & Turriano, 3185 East Tremont Avenue, as well as M. Del Balso, 660 East 221 Street, appear to be exceptionally successful recently in procuring sewer contracts.

Considering the shortage of shovels and the very favorable prospects for the next two years or more in this vicinity, and also taking into consideration that the shovel engineers must now be rolling in wealth, we, too, have every hope for the future.

North Carolina

The Lawrence Stone & Gravel Co. of Raleigh, North Carolina, is operating a Bucyrus Class-24 dragline and Bucyrus 15-ton locomotive crane with clamshell bucket in gravel pit at Garysburg, North Carolina. Mr. L. B. Riddle is superintendent, while Mr. E. J. Sloan pulls the levers on the dragline. The crane is used for loading material from stock pile in spring, therefore, is not in operation at present. In this section of the country, at this particular time, the main subject is hunting. It is surprising to learn the likes and dislikes of the hunter. Mr. Riddle says he wouldn't waste a shot on a rabbit, a squirrel or a possum, but he sure does love to hunt for birds. The question in my mind is, does he hunt for birds with feathers on? Then you take Sloan, the fellow who pulls the levers on the dragline. He goes to Weldon, North Carolina, every night, round trip of ten miles, to hunt up a moving picture show. Was good enough to show our correspondent the road to the hotel in Weldon, and then to disappear. Didn't learn whether he was especially fond of bird hunting.

The Excavating Company of Asheville, North Carolina, are doing the excavating on the old Battery Park site. At present they are using a 14-B and 20-B owned by the Asheville Construction Co., also a type "B" Erie. They're making the dirt fly.

Northwestern States Notes

BY A. R. HANCE, PORTLAND, OREGON

Bids for the grading and surfacing of several miles of the Wapinitia Spur, which will eventually connect the Mount Hood Loop Road with the Dalles-California Highway, and make a complete circuit from Portland through Southern Wasco County, will soon be called. The Government has already appropriated $140,000 and to this Wasco County has added $25,000. The County is asked to grade only that part of the proposed highway from Wapinitia to Bear Cat Springs at the edge of the Forest Reserve. Surveys of the Wapinitia Spur have been completed, and the right-of-way from Government Camp on the Mount Hood Loop has been cleared as far as Camas Prairie ranger station, about 15 miles. The new road will go from Camas Prairie through Frog Lake Buttes and thence to Wapinitia, a few miles from Maupin, through which runs the Dalles-California Highway.

Spokane County's five-year road-building program, to be completed in 1924, and for which approximately $850,000 will be available next year, will be started early next spring with the letting of eight or nine contracts for secondary roads connecting with some highway. The contracts will average from seven to twelve miles in length each, and when completed will leave little to be desired from a good road standpoint. County Commissioner Ham, stated the most important road, or where traffic is heaviest, will be included in next year's program. He also stated there would be almost enough money to complete the entire network of roads provided for in the bond issue, and that it was possible one or two of the unimportant roads would have to be slighted.

Proposals were received on the 8th of November, on the constructing or improving the Waldo-Elk Creek Section of the Grants Pass project, located partly within the Siskiyou National Forest, counties of Josephine in Oregon and Del Norte in California. The length of project to be constructed or improved is approximately 7.2 miles, and principal items of work required are as follows: Clearing, 35 acres; grubbing, 21 acres; rock excavation, 5,000 cubic yards; common excavation, 53,000 cubic yards; reinforcing steel, 9,600 pounds; culverts 1760 lineal feet. The Bureau of Roads, Portland, has available for loan to contractors various items of machinery list on proposal sheets.

The Oregon State Highway Commission, on October 23rd, awarded the following contracts: Paulina Prair-Lava Butte Section of the Dalles-California Highway, in Deschutes County, 7.69 miles of grading, awarded to Jetley Bros., Burns, Oregon, on their bid of $39,617 using concrete pipe; Stices Gulch Section of Baker-Unity Highway in Baker County, 62. miles of grading, awarded to Iver J. Roslen & Co., Portland, on their bid of $121,738.24, using concrete pipe.

Engineer C. H. Purcell, of the United States Bureau of Public Roads, cancelled the call for bids for road contractors' figures on the Bogachiel-Hoh River Section of the Olympian Highway that were to have been opened on November 8th. "It is my intention to take certain matters pertaining to the contract up with the Washington State Highway Department and new bids will be called again soon for a considerably enlarged project," said Engineer Purcell. This does not affect the bid on the Waldo-Elk Creek Section of the Grants Pass-Crescent City National Forest Road, involving 7.2 miles of grading and finishing, or the Detroit-Niagara National Forest Road project, involving 7.2 miles of grading and finishing. Bids on both of these latter projects will be opened on November 8th, as originally planned.

A surveying crew under Engineer Short of the Bureau of Public Roads, has arrived at Kooskia, Idaho, after completing location survey of another section of the Lewis and Clark Highway from a point 16½ miles about Lowell to the Lochsa River, about a mile above the mouth of Bald Mountain Creek, a distance of 16.55 miles. This section passes through the Black Canyon, which is nine miles long, and covers the heaviest construction on the entire Lewis and Clark project. The work will include two bridges, each more than 200 feet long.

Pacific Coast News

BY P. H. BIRCKHEAD, SAN FRANCISCO, CALIFORNIA

Bonds have been voted by the City of Azusa, California, in amount of $75,000 for improvement of 17 miles of streets.

Preliminary plans are being made by the Berkeley Waterfront Co., Berkeley, California, and an application has been filed with the War Department, for permission to dredge slips, construct a turning basin and a fairway north of the Key Route Pier, on the Berkeley Waterfront. Protests were heard by the War Department on October 1st.

The Monolith Portland Cement Company, Los Angeles, California, has moved its offices from the Hibernian Building to the A. C. Bartlett Building where it now occupies the entire top floor. This move was necessary because of the steady expansion and development of the Company.

The entire interests of the Burbank Rock and Gravel Company, Burbank, California, have been taken over by a new corporation to be known as the Standard Rock and Gravel Co., Inc. The Company at present has two plants in operation at Roscoe and will soon begin erection of a third, on twenty acres of land on which it has a ninety-nine year lease. When this is completed the company will be one of the largest in Southern California. Ernest H. Smith, Hollywood, is president; R. Houle, vice-president and general manager; and P. E. Brown, secretary-treasurer.

A report has been prepared by the Orange County Board of Harbor Commissioners, California, recommending the following extensions and betterments to the Newport Harbor. It is proposed to hold a bond election soon to vote on issuing bonds in amount of $940,000 for financing the work as follows: (1) East Jetty, to be deepened to 30 feet of water, $400,000.00; (2) West Jetty, extension of, and reinforcement, $195,000.00; (3) Entrance, to be dredged to depth of 30 feet, $135,000.00; (4) Construction of a belt line railroad, $50,000.00; (5) Wharves and warehouses, $75,000.00; (6) Engineering, etc., $85,000.00. No date has been set for a bond election as yet.

Bonds have been voted for Los Angeles County to the amount of $1,000,000 for construction of 25 miles of the Mulholland Skyline Highway, which will be 200 feet wide extending from the top of Cahuenga Pass to Calabasas, California.

The Board of Directors of the Paradise Irrigation District, Butee County, California, plan to increase the storage capacity of the Magalia Reservoir by raising the earth-fill Magalia Dam. The dam will be raised at different times in 20-foot high units, each contract to involve several hundred thousand cubic yards of earthwork. Plans have also been made by Consulting Engineer S. J. Norris, in Oroville, for the construction of the Princess Dam, concrete Constant Angle Arch type. This dam will not be constructed until the demand for water exceeds the potential supply of the Magalia Dam. It is also proposed by this District to install two hydraulic rams, to lift water from a low line canal to higher laterals.

Contract has been awarded to W. A. Bechtel, 625 Market Street, San Francisco, for 70,000 cubic yards earthwork at Emigrant Gap, for the Southern Pacific Railroad Co.

Plans are being prepared by City Engineer R. G. Manley and Consulting Engineer Geo. Hinckley for the construction of a 2,000,000-gallon reservoir and about four miles of 12-inch steel pipe line for the water supply of Upland, San Bernardino County, California. Bonds have been voted by the City in amount of $224,000 to finance this work. Part of this bond issue will be used to purchase the existing privately owned waterworks system.

Plans, surveys and estimates are being made by Burns & McDonnell Engineering Company, Marsh-Strong Building, Los Angeles, for intercepting sewer and trunk line sewers for the City of Glendale, Los Angeles County, California, estimated cost $1,000,000.

James Martin of Los Angeles has his 20-B shovel rented to Brown, Hansen & Rowe on excavation work. The crew consists of G. W. Brady, engineer, and Clarence Weihe, fireman.

Contract has been awarded to John Phillips, 637 Santa Ray Avenue, Oakland, California, who bid 23c per yard for the construction of the Poodle Creek Canal, below the Suter Buttes, for the State Reclamation Board. Work will involve 16,570 cubic yards earthwork.

The following contract has been awarded by the Turlock Irrigation District, Turlock, California: Enlargement of canals, work involving 96,000 cubic yards of earthwork, to Chas. F. Tullock, Merced, at $14,215.

The following consulting engineers have been appointed to assist Chief Engineer Geo. Posey in preparing plans and specifications for the construction of the Estuary Tube connecting Oakland and Alameda, California: Mr. W. H. Burr; Mr. S. M. Cotten; Mr. Merton C. Collins; and Mr. L. M. King. Plans will probably be ready for bids during the early part of next spring.

Contract has been awarded to the Callahan Construction Co., 419 Detwiler Building, Los Angeles, California, who bid $0.132 per yard for cash, or $0.139 per yard for warrants, for the construction of interior drainage and irrigation canals for Reclamation District No. 1660, in Sutter County. The work will involve approximately 1,000,000 cubic yards earthwork.

Plans are being made by American Crushed Rock Co., 622 American Bank Building, Los Angeles, California, for erection of a rock crushing and gravel plant on a 171-acre tract in the Peter Fleming Estate in the San Antonio Wash, between Foothill Boulevard and Cucamonga Avenue, 165 acres in Los Angeles County, and 6 acres in San Bernardino County, on the route of the Santa Fe Railway. Estimated cost $150,000. A Bucyrus 30-B Diesel shovel will be used on the work.

The United Dredging Co., Central Building, Los Angeles, California, was low bidder at 41.97 per cubic yard for dredging 700,000 yards off Deadman's Island.

Plans, surveys and field investigations have been completed by Chief Engineer Harry Barnes, of the San Joaquin Valley Water Storage District at Madera, California, for the construction of the storage, distribution and drainage systems for the District, and plans will be forwarded at once to the State Engineering Department, Forum Building, Sacramento, for approval. Plans as previously made for this project by the old Madera Irrigation District, now included in the new District, called for the construction of the following: Storage Dam—a dam 280 feet high to be constructed on the San Joaquin River, above Friant to be 5,300 feet long, and to store 600,000 acre feet of water; also canals, pumping plants, power development, etc. This district will include about 980,000 acres of land in the San Joaquin Valley. The plans, maps, and proposed boundaries of the District will be filed with the State Engineer shortly for approval.

Southern States Notes

BY C. N. BALLENTINE AND W. W. WHORLEY

The Swamp Dredging Corporation of Tupelo, Mississippi, have a large drainage project under way in Fayette and Lamar Counties, Alabama, on which they are using a floating dredge. Mr. Coley McGuire is in charge of operation. E. A. Kellum and J. A. Hardin are operating and C. C. Downs and H. L. Ramey are craning.

Jim Cook is running a Marion-91 for the Memphis Stone & Gravel Company, Camden, Tennessee. N. J. Marshbanks is craning and H. York firing. C. R. McAlister is superintendent in charge of operation.

The Durham Coal & Iron Company of Chattanooga, Tennessee, are stripping coal on Lookout Mountain with a 150-B shovel. The shovel is operated two shifts by the following crews: J. B. Ratliff and O. A. Keeling, runners; Joe Massey and Jack Hollingsworth, cranesmen; Will Rowland and Jake Davis, firemen; and L. E. McGhee and Frank Hixon, oilers. John Massey is master mechanic and Mr. C. W. McMillan is general superintendent in charge of operations.

J. E. McNamara is foreman for the Magic Collieries Co., at Ilsley, Kentucky. T. W. Thompson and L. M. Addington are stripping overburden with a 225-B, assisted by Wiley Thompson and Ed. Montgomery. Charles Gardiner is loading coal with a 35-B.

F. W. Wiggs is stripping coal at Western Collieries with a Class-24. Dick Davis is handling rock with a 175-B. P. P. Anderson is loading the coal with a 35-B.

Mr. C. D. Mullins, who has had many years of experience in the coal fields of Pennsylvania and in general construction work, is general superintendent over both the Magic and Western operations.

Mr. W. S. Keller, State Highway Engineer of Alabama, has recently undergone a serious operation for intestinal trouble at the Mayo Infirmary, Rochester, Minnesota. We are pleased to report that at the present time Mr. Keller is rapidly improving and trust that he will soon be at his office in Montgomery.

Mr. S. A. (Silas) Lacy was a recent caller at this office. Mr. Lacy is building a fill for the Southern Pacific with his Class-9½ near La Fayette, Louisiana.

The Newell Contracting Company of Birmingham were recently awarded 20 miles of roadwork in Lowndes County, Alabama.

This snapshot was sent to us by our old friend, C. R. Hurd, who is operating a Bucyrus 70-C shovel for the Dixie Contracting Company on a contract for enlarging Frogmore Yards at Bemis, Tennessee. Mr. Hurd has been operating this shovel No. 1364 since 1911, and has been in the service of the Dixie Contracting Company

since 1909. Mr. Hurd is what we call an old-timer, having begun the steam shovel game over twenty-five years ago. The two young cranesmen in the picture are his two grandchildren, Edward B. Hughes, Jr., Huntville, Alabama, and Martha Katherine Johnson, who both find a great deal of pleasure in climbing up on Granddad's 70-C.

Phillips & Company of Birmingham, Alabama, report steady progress on their road job in St. Clair County. Captain Jack Phillips reports that he now has a fine bunch of fox hounds which he follows when not busy building a road.

Chet Taylor has recently begun work on his road job in Franklin County.

The Signal Mountain Portland Cement Company have completed a new mill and are making cement. Their plant is located near Chattanooga and will have an ultimate capacity of 5000 barrels daily.

George Ridge is operating a new 20-B Bucyrus high-lift shovel for the State Highway Commission of Tennessee at Dove, Marion County.

Mr. R. S. Green, formerly with the American Steel and Wire Company at Chicago, has recently been appointed secretary of the Memphis Branch of the Associated General Contractors with offices in the Shrine Building, Memphis, Tennessee.

H. R. Jones is running a Bucyrus-95 for the Birmingham Slag Company at Ensley, Alabama. H. H. Bennett is riding the boom and W. M. Johnson making smoke.

J. M. Better is handling a Marion 37 at the Ensley pits, and E. R. Bennett is running a similar machine for the above company of Alabama City, Alabama.

The many friends of Mr. John M. Nichols, President of the Nichols Contracting Company, Atlanta, Georgia, were shocked to learn of his death on September 16th, following a brief period of illness. Although suffering at intervals with a form of heart trouble for many years, his death was a severe shock to his family and friends as his condition was not thought serious until a few hours before the end. Mr. Nichols was a pioneer in the construction business of North Georgia, the Nichols Contracting Company, of which he was founder and president, being engaged at present in the Spring Street Viaduct in Atlanta, and has been connected with important developments in Atlanta and North Georgia for many years. This firm built the A. B. & A. Railroad, the car lines connecting Atlanta and Marietta, and other large construction jobs in the vicinity of Atlanta.

J. D. Morris who has been running a 225-B for the Harris Collieries Company at Island, Kentucky, was a recent caller at this office. According to J. D. things are looking good in West Kentucky with a prospect of further development. The big shovel at Harris Collieries is being operated for three eight-hour shifts. Following is a list of the crews on the 225-B: First Shift — J. D. Morris, runner; Dewey Howell, cranesman; George Hall, fireman, W. A. Pinkerton, oiler; Second Shift — A. A. Gaut, runner; George Phillips, cranesman; Joe Clayton, fireman, G. F. Wells, oiler; Third Shift — G. C. Ray, runner; Will Craddock, cranesman; L. B. Bell, fireman; L. O. Allen, oiler. The 50-B coal loader is being handled by J. M. Marbough while John Easterwood is keeping things hot. Mr. J. G. Harris is general manager in charge of operations and is ably assisted by Mr. Al Oldacre, superintendent.

St. Louis Items

BY A. B. KOENIG

Wm. Danklef has added another tractor and team outfit on his work at Mount Vernon, Illinois, where he is grading the extensive yards for the Nason Coal Co.

Chas. Stoner has a good 40-team outfit about idle that he wants work for and Mendota, Illinois, will catch him.

M. Collier is with Cameron, Joyce & Co. on state highway work near Forreston, Illinois.

The State Department of Public Works and Buildings has awarded to W. F. Smith & Son of Rensselaer, Indiana, the contract for paving Section 2, Route 43, in Mason County, for $114,301. The section extends from the end of the road now being paved out from Havanna, which is five miles from that city east for a distance of 4.86 miles.

Blythe Bros. are moving their team outfit on to an Illinois Central Railroad cut-off south of Benton, Illinois.

The State Division of Highways of Illinois will open bids at Springfield on November 22nd for grading and paving 198 miles of new state highways.

C. J. Moritz, Effingham, Illinois, was low bidder for constructing 9 miles of pavement in Christian County.

H. R. Carpenter, Assistant Chief Engineer of the Missouri Pacific Railroad, was found dead near the door of his apartment at 5623 Kingsbury Boulevard at 7 o'clock a. m., November 12th. Death was due to a hemorrhage of the nose and lungs. Carpenter's body was found by Mrs. Ollie C. Hart, who occupies an apartment on the third floor of the building. She had gone downstairs to get a morning newspaper when she discovered him lying near the door to his apartment.

Beyers Wilson Construction Co. have moved their team outfit on to a state road job near Litchfield, Illinois.

M. C. Connors was in this neighborhood the other day looking over the country. He reports nothing new.

Harrington Bros. are finishing their Illinois State Highway, also their grading work in the southwest part of the city.

Bids will be asked in February by Water Commissioner Wall, St. Louis, Missouri, for fourteen miles of pipe lines leading to the new waterworks being erected on the Missouri River. He estimates the cost of the lines at $2,500,000.

Frank Sullivan is now at Perry, Ohio, with an outfit on the Wabash Construction Co. work.

Blackie Shillato of the Walsh Construction Co. has been transferred to their Cleveland work.

Woolsey Construction Co. have their outfit at work on the Big Four Railroad near Bellevue, Ohio.

Canada

Montreal and Vicinity

BY J. M. WARD

One of the largest drydocks in the world was officially opened at St. John, New Brunswick, on October 29th, by the St. John Drydock & Shipbuilding Co. The overall length of the dock is 150 feet, the clear width of the entrance 125 feet, with 42 feet of water from floor to sill. This dock was started by the present Company in 1918.

The Dominion Government will call for tenders within a couple of weeks for construction of Section 8 of the new Welland Ship Canal. This will leave only Section 6 and 7 to be placed on the contract, and it is hoped that Section 7 will be ready for calling of tenders next spring. The principal items of work for Section 8 will be rock excavation, and the construction of a guard lock, together with submarine rock excavation in the harbor of Port Colburne and a new breakwater.

L. N. Huart, at Levis, recently purchased water power right from the Quebec Government, at Temiskaming, and will develop 22,000 h. p., and erect a pulp mill.

It is estimated that there is about $11,000,000 worth of hydro-electric power developments work in preparation through various points in Quebec and Eastern Ontario. The most of this it is expected will be proceeded with in 1924.

Toronto and Vicinity

BY C. E. ENGLAND AND N. DE WIND

The Federal Construction Company, Toronto, Ontario, contractors for the Canadian National Railway, Donnacona cutoff, expect to start work shortly.

The Lumsden Engineering & Transport Co. of Toronto were awarded the contract for the Tailrace Channel at Dam No. 9, Trent River, for the Ontario Hydro-Electric Commission. This will be almost entirely rock excavation from the river bed. Mr. Lumsden Cummings, President of the Company, advises that they have some plant already on the ground, and have started work.

It is reported that the Ontario Government favors the building of a trunk highway to connect the Soo and Winnipeg, via Port Arthur and Fort William, and that their engineers are now making survey of Lake Superior north shore line with a view to locating same.

The Federal Government, Ottawa, Canada, announces that Section 8 of the Welland Canal will be advertised for tenders very soon. This section will include considerable rock excavation and construction of a guard lock at the eastern end.

Mr. Thos. Murphy has been appointed Vice-President and General Manager of the Dufferin Construction Co., Toronto. Mr. Murphy was formerly connected with the City of Toronto, Department of Roadways, where he was superintendent of asphalt paving for a number of years. Mr. Franchesini, the President of the Company, left Toronto early in November, on a visit to Europe.

York Township advertises 6000 feet of sewer and a septic tank for tenders. Mr. F. E. Goedike is the Township Engineer.

The Russell Construction Co., Ltd., have started work on the new East St. Clair Bridge, Toronto. Over 8000 yards of earth are in process of being moved for the foundations at the bottom of the ravine. The Company have established a large storage shed for cement, etc., at Canadian Pacific Railway, North Yonge Street Station, where they have set up a big locomotive crane for stock piling sand and stone.

The Toronto Brick Co. have just installed an electric double-drum hoist by the Marsh Engineering Works to operate their dragline excavator at York Plant. They are stock piling large quantities of excellent clay from their pits. Mr. H. Race, superintendent of all the company's plants, is in direct charge. Mr. H. L. Waterman is the general manager of the company.

Work on the dam site for the Hollinger Mines, Abitibi Hydro-Power Plant has started. Sir William Arrol & Co., Ltd., the contractors, are on the ground establishing camp, and also one of their subcontractors, Messrs. Downing Cook & Co., of Montreal. The consulting engineers are Kerry & Chace, Ltd., Toronto. The latter have let contract to Lang & Ross, Sault Ste. Marie, Ontario, for the grading and setting up of the steel tower on their new hydro-electric transmission line which covers approximately 80 miles from the Abitibi River into Timmins, Ontario.

McNamara Bros. & Thornton of Toronto have started work on their rock excavation for Algoma Central Railway near the Soo. Mr. Geo. McNamara has been on the job making arrangement for the winter's work.

Vancouver Notes

BY J. C. MOON

Construction work has started on a $500,000 plant for the Maitland Portland Cement Co. at Popcum, near Chilliwack. The company is financed by British capital. It will manufacture cement, lime and brick and employ one hundred men.

Sawmill proprietors at Vancouver, British Columbia, informed the civic fire and police committee that they are willing to erect a central heating plant at a cost of at least $250,000, if the city will grant a suitable franchise to a local company to be promoted to handle the plant. A by-law will likely be submitted to the ratepayers in December.

Contract for the construction of pavement entrance approach to the Canadian National station awarded to the Columbia Bitulithic, Ltd., Vancouver, British Columbia, at $12,000. Other bidders: Harrison & Lamond.

Contract has been let by the Provincial Government Department of Public Works to Eugene de Paolo, Vancouver, for grading new roads at Point Greg, British Columbia. Approximate cost, $30,000.

G. A. Beattie, secretary of the Western Pacific Grain Elevators & Terminals, Ltd., proposes to construct an elevator at New Westminster, British Columbia, and has asked the city council for certain concessions.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review, in this column, such books and catalogs as are sent to us.

WOOD PIPE AND CREO-WOOD FLUME — This catalog contains 248 pages, is profusely illustrated and contains a great deal of hydraulic data, flow tables, and much practical information of value to the hydraulic engineer or plant superintendent who may be confronted with hydraulic problems both in the design and construction of water conduits, municipal water systems, hydro-electric developments, mining and sluicing operations, irrigation systems, sewerage and drainage systems, paper mills, and other industries.

This catalog and handbook is the result of thirty years' continuous gathering of data and represents the most modern practice in the wood pipe and semi-circular flume industry. The flow tables, for instance, are based on formulae developed by United States government engineers after exhaustive field tests on a large number of wood pipe and flume installations. There is also much information based on research work of the University of Washington and United States Forestry Service. This booklet may be obtained by writing to *The Continental Pipe Manufacturing Co., Seattle, Washington.* Use postal enclosed.

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